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December 9, 1997

FILED

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, NW
Washington, DC 20554

RECEIVED

DEC - 9 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Re: MM Docket No. 97-182 Ex Parte Notice
MM Docket No. 93-25 Ex Parte Notice
MM Docket No. 87-268 Ex Parte Notice

Dear Mr. Caton:

The Association of America's Public Television Stations ("APTS") hereby notifies the Commission of the following ex parte meeting in the above referenced Preemption of State and Local Zoning to Site and Construct Broadcast Facilities, Direct Broadcast Satellite and the Digital Television proceedings.

The meeting occurred on December 3, 1997, and was attended by David Brugger, President, APTS, Marilyn Mohrman-Gillis, Vice President, Policy and Legal Affairs, APTS, and Lonna Thompson, Director, Legal Affairs, APTS.

We met with Chairman Kennard, Ari Fitzgerald, Legal Advisor to Chairman Kennard, Susan Fox, Senior Legal Advisor to Chairman Kennard and Rebecca Arbogast, Senior Legal Advisor to the International Bureau.

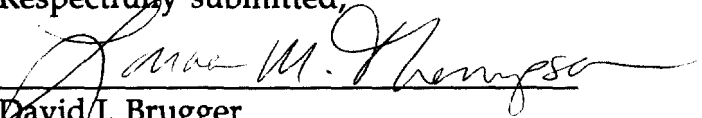
The meeting addressed the digital television and direct broadcast satellite proposed rules and the preemption proceeding's notice of proposed rulemaking.

042

Mr. William F. Caton
December 9, 1997
Page 2

Should any questions arise concerning these meetings, please contact the undersigned.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "David J. Brugger", is written over a horizontal line.

David J. Brugger

President

Marilyn Mohrman-Gillis

Vice President, Policy and Legal Affairs

Lonna M. Thompson

Director, Legal Affairs

Association of America's Public Television
Stations

1350 Connecticut Ave., N.W. - Suite 200

Washington, DC 20036 - (202) 887-1700

cc: William Kennard, Chairman, FCC

THE ASSOCIATION OF AMERICA'S PUBLIC TELEVISION STATIONS

ADVOCACY ON BEHALF OF PUBLIC TELEVISION STATIONS

The Association of America's Public Television Stations (APTS) is a nonprofit membership organization established in 1980 to support the continued growth and development of a strong and financially sound noncommercial television service for the American public. APTS provides advocacy for public television interests at the national level, as well as consistent leadership and information in marshaling grassroots and congressional support for its members, which are the nation's public television stations.

APTS works closely with individual station representatives to plan and implement appropriate legislative strategies and effect legislative results that enable stations to fulfill their individual missions. As broadcasters begin to make the transition to digital transmission, APTS is working to ensure the federal government continues its commitment to universal public television services.

APTS also works with a station-based volunteer coordinator to generate grassroots support for public television through Community Advocate Teams (CATS) and the National Friends of Public Broadcasting.

REPRESENTATION

The changes in the telecommunications environment and public television's federal funding make APTS' legal and regulatory activities on stations' behalf more important than ever before. APTS advocates stations' interests on taxation, budget, education, cable, digital television and related issues. APTS' regulatory and legal efforts continue to focus on ensuring access to new technologies for public television services; advocating the interests of public television stations in regulatory proceedings at the FCC, NTIA and IRS; participating in litigation where our members' interests are at stake; and providing information about legal and regulatory issues to stations on a systemwide basis.

SIGNALING VALUE

The Association of America's Public Television Stations helps stations to develop a strong base on which to build their own efforts through exhibits and events for members of Congress, the Administration, the media and the public; publications, brochures, fact sheets and position statements covering services and programs offered by stations; the Managing Change Clearinghouse, which collects data on how stations are achieving success, provides analysis from consultants working with stations, and offers tools to deal with new technologies and economic imperatives—publishing *Transitions* with ideas stations can replicate; and a strong online presence, providing in-depth timely information about the association, its members, its activities and the institution of public broadcasting to the general public, through use of electronic mailing lists and a World-Wide Web site.

PLANNING AND RESEARCH

Planning and research activities serve stations by identifying current and emerging issues which influence public television's effectiveness in serving audiences—both now and in the future. The planning and research function is becoming increasingly important as the media environment changes, and the association provides the means for the enterprise to define the future that it wants to advocate in legislative and regulatory arenas nationally and locally.

COMMUNICATIONS

The Association of America's Public Television Stations serves the stations by communicating the concerns and values of public television to many audiences—legislators, regulators, opinion leaders, business leaders, educators and the general public—through media relations, publications, special events and public relations. APTS uses communication as a means of creating a climate for future gains, such as reinforcing the sense of public television's value in the minds of its many audiences.

GOVERNANCE OF THE ASSOCIATION

The Association of America's Public Television Stations is governed by a board of trustees elected by public television station representatives. The board consists of nine public representatives, nine professional representatives and up to six "at-large" trustees, who may be elected by the board. The president of the association also serves as a member of the board of trustees. Members are elected to a three-year term and may serve no more than two consecutive terms.

November 1997



APTS REGULATORY REPORT

DIGITAL TELEVISION

On April 21, 1997, the FCC culminated its ten-year digital television (DTV) proceeding by adopting DTV service rules and a Table of Allotments and Assignments of digital television channels to broadcasters. The Commission targeted the date of 2006 for the ending of NTSC service. Public television stations have until May 1, 2003 to complete construction and begin operating digital transmission facilities.

Based upon comprehensive information gathered through surveying member stations, on June 13, 1997, APTS filed, with PBS, a joint Petition for Reconsideration and Clarification of portions of the FCC's DTV orders. In the petition, APTS and PBS requested a number of modifications to the Commission's rules, which, if adopted, would provide public television licensees with added flexibility to deal with the burdens of the transition to digital television, without affecting the basic planning factors and principles underlying the FCC's Table of DTV Allotments. In particular, the petition sought relief for public television stations with digital assignments outside the core spectrum and for public television translator stations. Additionally, APTS and PBS sought clarification of certain aspects of the Reports, including clarification that public television licensees can use the excess transmission capacity offered by digital transmission for commercial, revenue-generating purposes in order to help defray the costs of constructing and operating their DTV facilities.

EARLY REALLOCATION OF CHANNELS 60-69

On July 10, 1997, the FCC released a rulemaking on the reallocation of Channels 60-69 in the 746 - 806 MHz band. The FCC is proposing to allocate 24 MHz to the public safety service and allocate the remaining 36 MHz to the fixed, mobile, and broadcasting services to be assigned through competitive bidding. APTS and PBS filed comments on the FCC's proposal on September 15, 1997. The comments addressed the importance of providing measures to afford public television stations with DTV assignments in the 60 - 69 band relief in the timing and costs associated with relocation. Additionally, APTS and PBS advocated full protection for existing NTSC stations in that band until the end of the transition. Lastly, APTS and PBS requested flexibility for public television translator stations in that band in engineering assignments into the table.

and radio stations pay contributions into the universal service fund. FCC staff has opined that any revenues derived by public television or radio through leasing excess capacity on the vertical blanking interval of broadcast channels, on ITFS channels, or on satellite transponders will be subject to universal service contributions. APTS, PBS, and NPR believe that this clearly is not the intent of Congress. Accordingly, APTS, PBS, and NPR have requested clarification regarding the application of the Commission's universal service rules to public broadcast stations and ITFS licensees. If the Commission concludes that the language of the universal service rules extends the requirement for contributions to the universal fund to revenues derived from lease arrangements, APTS, PBS, and NPR have requested an exception or waiver of this requirement.

MAIN STUDIO AND PUBLIC INSPECTION FILE RULES

APTS and PBS filed comments on August 8 with the FCC on its proposed revisions to its main studio and public inspection file rules. APTS and PBS supported the FCC's proposal to relax its main studio location rule to a standard requiring the main studio be "reasonably accessible" to its community of license. Relaxation of the main studio rule would provide public television stations with more flexibility in locating their main studios. Additionally, APTS and PBS supported the FCC's proposed elimination of unnecessary public inspection file requirements in order to ease licensees' responsibilities. Further, APTS and PBS requested that the FCC clarify public television stations' retention responsibilities regarding the requirement to attach a summary of citizen complaints of violent programming to renewal applications.

2 GHz RELOCATION

The FCC adopted an order reallocating 70 MHz of spectrum in the 2 GHz band to the mobile satellite service ("MSS"). This reallocation necessitates moving the existing broadcast auxiliary services ("BAS") in the 1990-2025 MHz frequencies to the 2025-2130 MHz band. The FCC's order specifies that the MSS entrants must bear the costs of relocation. The FCC sought public comment on the costs and timing associated with the relocation.

APTS and PBS filed comments with the FCC on July 21, 1997, stressing the importance of the MSS entrants bearing the full costs of the BAS relocation. Further, APTS and PBS supported the recommendation for a broadcast industry negotiating entity composed of NAB, MSTV and a public television representative to effect the transition in a timely and fair manner and to ensure reimbursement of relocation costs for all broadcast licensees.

PUBLIC ACCESS TO PUBLIC TELEVISION SERVICES

I. Congress Has Determined That Access to Public Telecommunications Programming Serves a Compelling Government Interest

A. The Public Telecommunications Act of 1992

It is well-founded Congressional policy that the public interest requires that public telecommunications services be accessible by as many citizens as possible, regardless of the technology or systems employed, and regardless of whether those services, in the past, have been primarily distributed by broadcast technology. The Public Telecommunications Act of 1992, signed into law by President Bush on August 26, 1992, adds a new paragraph—396(a)(9)—to the Communications Act of 1934.

396(a)(9) states:

it is in the public interest for the Federal Government to ensure that all citizens of the United States have access to public telecommunications services through all appropriate available telecommunications distribution technologies . . .¹

The legislative history of this statute is also very clear. The House Committee Report states Congress' finding that access to public telecommunications services, through all available distribution technologies is intended to advance the compelling governmental interest in increasing the amount of educational, informational, and public interest programming available to the public:

The Committee recognizes the tremendous expansion of telecommunications delivery systems made possible by technological advances. The Committee believes that the full potential of telecommunications as a means to address educational issues can be realized only if the public is provided access to public service programming through all distribution technologies—not just broadcast—that are

¹ Pub. L. No. 102-356, 106 Stat. 949 (Aug. 26, 1992).

available to them. To achieve this potential, the sound public policy of reserving broadcast channels for public television and radio should be extended to reserve capacity for public service programming on new distribution technologies.

The Committee believes that it is in the public interest to ensure that all citizens have access to public telecommunications services. The Committee strongly endorses a policy of broad access to the essential public services offered by public telecommunications, regardless of the technology used to deliver those services, in order to advance the compelling governmental interest in increasing the amount of educational, informational, and public interest programming available to the nation's citizens.²

B. The Public Broadcasting Act of 1967 and Its Progeny

Congress has long advocated a strong federal policy of access to public telecommunications services. In the 1967 Act, Congress found that:

it is necessary and appropriate for the Federal Government to complement assist, and support a national policy that will most effectively make public telecommunications services available to all citizens of the United States.³

Congress' emphasis on the nonbroadcast delivery of public telecommunications services is not new. From the inception of public broadcasting, Congress has recognized the importance of utilizing

² H.R. Rep. No. 363, 102d Conger 1st Sess. 18 (1991) [emphasis added]. The Senate Report on this legislation contains similar language, see, e.g. S. Rep. No. 221, 102d Cong., 1st Sess. 7 (1991).

³ 47 U.S.C. 396(a)(7). Congress has repeatedly reaffirmed its support for access to public service programming in its annual appropriations deliberations and every three years in its reauthorization of funding. Since 1967, Congress has appropriated approximately \$3.89 billion (through FY 1995) to fund public service programming through CPB, and approximately \$597 million, through FY 1992) for the planning and construction of public television and radio facilities, including the public broadcasting satellite distribution system.

nonbroadcasting distribution mechanisms for the delivery of public service programming: "it is in the public interest to encourage the growth and development of nonbroadcast telecommunications technologies for the delivery of public telecommunications services. " 47 U.S.C. 5396(a) (2). Congress has continued to support access to public service programming through emerging nonbroadcast delivery technologies. The Definitions section of the 1967 Act makes provision for the dissemination of noncommercial educational programming over both broadcast and other than broadcast facilities. See 47 U.S.C. §§397 (6) and (7).

In 1978, Congress adopted the Telecommunications Financing Act to assist in the funding of public telecommunications facilities, to "extend delivery of public telecommunications services to as many citizens of the United States as possible by the most efficient and economical means, including the use of broadcast and nonbroadcast technologies."⁴ The Senate Report to the 1978 Act specifically anticipated "the breakthroughs that are likely in optical fiber," among other technologies, and noted that "[i]t is in the public interest for public broadcasting to practicable of these new technologies."⁵

C. The Cable Television Consumer Protection and Competition Act of 1992 and other Statutes

Since the Commission's video dialtone decision, Congress has also adopted policies facilitating access for public service programming in two additional distribution technologies: cable and direct broadcast satellite ("DBS"). In the Cable Act, which became law on October 5, 1992, Congress has required cable to carry public television stations. In so doing, Congress recognized:

a substantial governmental and First Amendment interest in ensuring that cable subscribers have access to local noncommercial educational stations which Congress has authorized, as expressed [in the Communications Act of 1934].⁶

⁴ (47 U.S.C. §390) (Emphasis added).

⁵ Senate Committee on Commerce, Public Telecommunications Financing Act of 1976, S. Rep. No. 95-858, 95th Cong. 2d Sess. 6.

⁶ The Cable Act, § 2(a)(7).

Congress specifically recognized that its “must carry” provision was part of its broader policy of facilitating the delivery of public telecommunications services:

The government has a compelling interest in ensuring that [public telecommunications services] remain fully accessible to the widest possible audience without regard for the technology used to deliver these educational and informational services.⁷

Congress recognized that laws guaranteeing access to cable systems are necessary in part because “public television has provided precisely the type of programming commercial broadcasters and cable operators find economically unattractive.”⁸

In the same cable legislation, Congress provided for reservation of capacity, and for preferential rates, for the distribution of public service programming on the newly emerging direct broadcast satellite service.⁹ The law provides that a DBS service provider must reserve between 4 and 7 percent of its channel capacity “exclusively for noncommercial programming of an educational or informational nature.”¹⁰ The provider shall make capacity available “upon reasonable prices, terms, and conditions, as determined by the Commission . . .” In determining reasonable prices, “the Commission shall take into account the nonprofit character of the programming provider and any Federal funds used to support such programming”; and shall not permit prices in excess of 50% of the total direct costs of making the channel available.¹¹

⁷ H.R. Rep. 682, 101st Cong., 2d Sess. 47 (1991) [emphasis added].

⁸ Id. at 48.

⁹ Congress had previously expressed its intent that the public have access to satellite delivered public service programming by requiring that at least one channel of Public Broadcaster’s satellite-distributed National Program Service must remain unencrypted. This provides home satellite dish owners access to public broadcasting without having to be concerned about how much such access will cost. 47 U.S.C. §605 (C).

¹⁰ Cable Act, §335 (b)(1).

¹¹ Id. at §335 (b) (4).

This provision of the Cable Act was appealed and declared unconstitutional by the U.S. District Court.¹² A three-judge panel of the federal Court of Appeals for the D.C. Circuit reversed the District Court and held the set-aside constitutional. The three-judge panel found that the DBS set-aside "represents nothing more than a new application of a well-settled governmental policy of ensuring public access to noncommercial programming."¹³ The must carry and DBS provisions constitute the most recent strong and unequivocal restatements of Congress' fundamental public telecommunications access policy.

Significantly, Congress has also manifested concern that access by the American public to public television must be ensured in the common carrier context, Section 396 (h)(1) of the Communications Act, states: "Nothing in this Act, or in any other provision of law, shall be construed to prevent United States common carriers from rendering free or reduced rate communications interconnection services for public television. . ."¹⁴

II. Access to Public Telecommunications Services Has Also Been A Steadfast Commission Policy

Until the issuance of the subject Report and Order, Commission policies have always resonated with the Congressional mandates discussed above. Beginning in 1952, the Commission, recognizing the unique and important services that such television programming could offer, reserved 242 channels on Ultra High Frequency (UHF) spectrum (Channels 14-83) for educational television.¹⁵ Since then, the Commission has defended these reservations against efforts by commercial broadcasters to de-reserve them;¹⁶ and it has reserved additional channels to further the reach of public television

¹² Daniels Cablevision, Inc., v. United States, 835 F. Supp. 1 (D.D.C.) 1993.

¹³ Time Warner Entertainment Co. v. FCC, 93 F. 3d 957 (D.C. Cir.) 1996.

¹⁴ 47 U.S.C. §396 (h) (1).

¹⁵ Television Assignments, Sixth Report and Order, 41 F.C.C. 148 (1952).

¹⁶ See, e.g., Television Assignments in New Smyrna Beach, Florida 50 R.R.2d 1714 (1982); Television Assignments in Houston, Texas, 50 R.R.2d 1420 (1982); Table of Assignments in Ogden, Utah, 26 F.C.C. 2d 142 (1970), recon. denied, 28 F.C.C. 2d 705 (1971); Channel Assignments in Hamilton, Alabama, 21 R.R. 1577 (1961), 17 R.R. (1961); Channel Assignments in Longview-Denton, Texas, 17 R.R. 1549(1958); recon denied, 17 R.R. 1552a (1959); Channel Assignments to Des Moines, Iowa, 14 R.R. 152d (1956), recon denied, 14 R.R. 1528 (1956).

service,¹⁷ to provide better picture quality,¹⁸ to permit the formation of networks of noncommercial educational stations.¹⁹

The Commission also recognized the need for cable carriage rules to ensure access to public television programming. In its 1990 Cable Report to Congress, the Commission stated:

Because of the unique service provided by noncommercial television stations, and because of the expressed governmental interest in their viability, we believe that all Americans should have access to them. We believe that mandatory carriage of noncommercial television stations would further this important goal.

Most recently, the Commission has affirmed its commitment to the continued vitality of noncommercial television in the digital world. Specifically, in a report and order recently issued in the digital television proceeding, the Commission recognized "the high quality programming service noncommercial stations have provided to American viewers over the years" as well as "the financial difficulties faced by noncommercial stations." Because "noncommercial stations will need and warrant special relief measures to assist them in the transition to DTV," the Commission expressed its intent "to grant such special treatment to noncommercial broadcasters to afford them every opportunity to participate in the transition to digital television."²⁰

¹⁷ See, Television Channel Assignment at Anchorage, Alaska, 68 R.R. 2d 1121 (1990); Television Channel Assignment at Victoria, TX, 52 R.R.2d 1508 (1993); Television Assignment at Seaford, Del., 43 R.R.2d 1551 (1978); Television Channel Assignment at Mount View, Ark., 38 R.R. 2d 1298 (1976); Television Channel Assignment at Eufaula, Okla., 35 R.R. 2d 1039 (1975); Television Channel Assignment at Booneville, Miss., 27 R.R. 2d 246 (1973); Television Channel Assignment at Parson, Kansas, 23 R.R. 2d 1707 (1972); Television Channel Assignment at the Virgin Islands, 20 R.R. 2d 1659 (1970) (Mileage separation requirements with co-channels in Puerto Rico waived; the most important factor for waiver is that the channels were for educational use); Television Channel Assignment at Las Cruces, New Mexico, 14 R.R. 2d 1518 (1967) (18 UHF channels assigned to Hawaii, with 9 reserved for noncommercial educational use); Television Channel Assignment Eagle Butte, S.D., 10 R.R. 2d 1767; Television Channel Assignment in Staunton, VA., 5 F.C.C. 2d 537 (1966).

¹⁸ Television Channel Assignment at Nashville, Tenn., 26 R.R. 2d 1667 (1973).

¹⁹ Television Channel Assignment at McGill, Nevada and Richfield, Uta., 24 R.R. 2d 1855 (1972).

²⁰ Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service, MM Docket No. 87-268, Fifth Report and Order (rel. April 21, 1997), ¶ 101.

Public Television Stations* by Licensee Type

Community (88) (49%)

KAKM, ANCHORAGE AK
 KTOO, JUNEAU AK
 KYUK, BETHEL AK
 KCET, LOS ANGELES CA
 KEET, EUREKA CA
 KIXE, REDDING CA
 KQED, SAN FRANCISCO CA
 KRCB, ROHNERT PARK CA
 KTEH, SAN JOSE CA
 KVIE, SACRAMENTO CA
 KVPT, FRESNO CA
 KBDI, BROOMFIELD CO
 KRMA, DENVER CO
 CONNECTICUT PTV
 WETA, WASHINGTON DC
 WHYY, PHILADELPHIA PA
 WEDU, TAMPA FL
 WJCT, JACKSONVILLE FL
 WMFE, ORLANDO FL
 WPBT, MIAMI FL
 WXEL, WEST PALM BEACH FL
 KGTF, GUAM
 WMEC/WSEC/WQEC, MACOMB IL
 WTTW, CHICAGO IL
 WTVP, PEORIA IL
 WFWA, FORT WAYNE IN
 WFYI, INDIANAPOLIS IN
 WNIN, EVANSVILLE IN
 WNIT, SOUTH BEND IN
 WYIN, GARY IN
 KOOD/KSWK, BUNKER HILL KS
 KPTS, WICHITA KS
 WYES, NEW ORLEANS LA
 WGBH/WGBY, BOSTON MA
 MAINE PUBLIC TELEVISION
 WTVS, DETROIT MI
 KAWE, BEMIDJI MN
 KTCA/KTCI, ST. PAUL MN
 KWCM, APPLETON MN
 WDSE, DULUTH MN
 KCPT, KANSAS CITY MO
 KETC, ST. LOUIS MO
 KOZK/KOZJ, SPRINGFIELD MO
 WTVI, CHARLOTTE NC
 PRAIRIE PUBLIC BROADCASTING
 WNET, NEW YORK NY
 KNPB, RENO NV
 WCFE, PLATTSBURGH NY
 WCNY, SYRACUSE NY
 WLIW, LONG ISLAND NY
 WMHT/WMHQ, SCHENECTADY NY
 WNED/WNEQ, BUFFALO NY

WNPE/WNPI WATERTOWN NY
 WSKG, BINGHAMTON NY
 WXXI, ROCHESTER NY
 WCET, CINCINNATI OH
 WGTE, TOLEDO OH
 WNEO/WEAO, AKRON OH
 WPTD/WPTO, DAYTON OH
 WVIZ, CLEVELAND OH
 KSYS, MEDFORD OR
 OREGON PUBLIC BCASTING
 WITF, HARRISBURG PA
 WLVT, ALLENTOWN PA
 WQED/WQEX, PITTSBURGH PA
 WQLN, ERIE PA
 WVIA, SCRANTON PA
 WYBE, PHILADELPHIA PA
 WIPM/WIPR, MAYAGUEZ PR
 WCTE, COOKEVILLE TN
 WKNO, MEMPHIS TN
 WLJT, LEXINGTON TN
 WSJK, KNOXVILLE TN
 WTCI, CHATTANOOGA TN
 KCOS, EL PASO TX
 KCTF, WACO TX
 KEDT, CORPUS CHRISTI TX
 KERA/KDTN, DALLAS TX
 KLRN, SAN ANTONIO TX
 KLRU, AUSTIN TX
 KMBH, HARLINGEN TX
 WBRA, ROANOKE VA
 WCVE/WCVW/WNVC/WNVT,
 RICHMOND VA
 WHRO, NORFOLK VA
 WVPT, HARRISONBURG VA
 VERMONT ETV
 KCTS/KYVE, SEATTLE WA

Local Authority (8) (5%)

KLCS, LOS ANGELES CA
 WLRN MIAMI FL
 WPBA, ATLANTA GA
 KSMQ, AUSTIN MN
 KLVX, LAS VEGAS NV
 WNYE, NEW YORK NY
 WDCN NASHVILLE TN
 KSPS, SPOKANE WA

State (23) (12%)

ALABAMA PUBLIC TV
 ARKANSAS ETN
 KVZK, PAGO PAGO
 GEORGIA PUBLIC TELEVISION
 HAWAII PUBLIC TELEVISION

* All FY98 CSG Recipients

Public Television Stations* by Licensee Type

State (23) (12%), con.

IOWA PUBLIC TELEVISION
IDAHO PUBLIC TELEVISION
KENTUCKY EDUCATIONAL TV
WKPC, LOUISVILLE KY
LOUISIANA PUBCASTING
WLAE NEW ORLEANS
MARYLAND PUBLIC TV
MISSISSIPPI ETV
NEBRASKA ETV
NEW JERSEY NETWORK
OKLAHOMA ETA
WSBE, PROVIDENCE RI
SOUTH CAROLINA ETV
SOUTH DAKOTA PUBLIC TV
WTJX, ST. THOMAS
KBTC, TACOMA WA
WISCONSIN ETV
WEST VIRGINIA PTV

University (60) (34%)

KUAC, FAIRBANKS AK
KAET, PHOENIX AZ
KUAT, TUCSON AZ
KCSM, SAN MATEO CA
KOCE, HUNTINGTON BEACH CA
KPBS, SAN DIEGO CA
KVCR, SAN BERNARDINO CA
KTSC, PUEBLO CO
WHMM, WASHINGTON DC
WBCC, COCOA FL
WCEU, DAYTONA FL
WFSU, TALLAHASSEE FL
WGCU, FORT MYERS FL
WSRE, PENSACOLA FL
WUFT, GAINESVILLE FL
WUSE, TAMPA FL
WEIU, CHARLESTON IL
WILL, URBANA IL
WQPT, MOLINE IL
WSIU/WUSI, CARBONDALE IL
WYCC, CHICAGO IL
WIPB, MUNCIE IN
WTBU, INDIANAPOLIS IN
WTIU, BLOOMINGTON IN
WVUT, VINCENNES IN
KTWU, TOPEKA KS
WKYU, BOWLING GREEN KY
WCMU, MOUNT PLEASANT MI
WFUM, FLINT MI
WGVU/WGVK, GRAND RAPIDS MI
WKAR, EAST LANSING MI
WNMU, MARQUETTE MI

WUCM, UNIVERSITY CENTER MI
KMOS, WARRENSBURG MO
KUSM, BOZEMAN MT
NORTH CAROLINA PTV
KUON, LINCOLN NE
NEW HAMPSHIRE PTV
KENW, PORTALES NM
KNME, ALBUQUERQUE NM
KRWG, LAS CRUCES NM
WBGU, BOWLING GREEN OH
WOSU, COLUMBUS OH
WOUB, ATHENS OH
KRSC, CLAREMORE OK
WPSX, CLEARFIELD PA
WMTJ, RIO PEDRAS PR
KACV, AMARILLO TX
KAMU, COLLEGE STATION TX
KNCT, KILLEEN TX
KOCV, ODESSA TX
KTXT, LUBBOCK TX
KUHT, HOUSTON TX
KBYU, PROVO UT
KUED, SALT LAKE CITY UT
KULC, OGDEN UT
KWSU, PULLMAN WA
WHA, MADISON WI
WMVS/WMVT, MILWAUKEE WI
KCWC, LANDER WY

* All FY98 CSG Recipients

THE NEW

PLAIN ENGLISH

GUIDE TO

TECHNOLOGY

1 9 9 6 E D I T I O N

Telecommunications Trends
and Their Impact on
Public Television Stations

John Carey
Greystone Communications

© January 1996
The Association of America's Public Television Stations

ACKNOWLEDGEMENTS

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T A B L E O F C O N T E N T S

THE NEW PLAIN ENGLISH GUIDE TO TECHNOLOGY

C H A P T E R I

TECHNOLOGY TRENDS & SERVICE IMPLICATIONS

INTRODUCTION	1
TECHNOLOGY TRENDS	2
Online Networks	2
The Internet	3
INTERACTIVE TELEVISION	4
A Brief History of Interactive Television	4
What is Interactive TV?	5
Pseudo-Interactive TV	5
Low-End Interactive TV	6
High-End Interactive TV	6
How it Works	6
Hybrid Interactive TV	7
Technical and Financial Issues	7
Upgrades to Cable Systems	8
Upgrades to Telephone Networks	10
▲ VIDEO DIALTONE	11
▲ ASYMMETRICAL DIGITAL SUBSCRIBER LINE (ADSL)	11
▲ OVERBUILDS	11
▲ WIRELESS CABLE	12
Evolution of the Personal Computer	12
Direct Broadcast Satellite	13
Digital TV	14
▲ DIGITAL COMPRESSION	15
▲ HIGH DEFINITION TV (HDTV)	15
▲ ADVANCED TELEVISION	16
▲ DIGITAL PRODUCTION STUDIOS AND TRANSMITTERS	17
▲ DIGITAL SET-TOP BOXES	17

CONSUMER SERVICE IMPLICATIONS	18
Competition and New Services	18
Telebanking/Commuting/Education/Medicine/ Shopping	18
▲ TELES SHOPPING	18
▲ TELEBANKING	18
▲ TELECOMMUTING	18
▲ TELE-EDUCATION	19
▲ TELEMEDICINE	19
Interactive Programs	19
Killer Applications	19
Video-On-Demand (VOD)	19
Near-Video-On-Demand (NVOD)	20
Electronic Program Guides	20
Multimedia	20
Personalized and Customized Services	20
Multiple Channels	21

C H A P T E R I I

COMMERCIAL ACTIVITIES & QUESTIONS FOR PUBLIC TV

COMMERCIAL ACTIVITIES	23
Online Services	23
▲ COMPU SERVE	23
▲ AMERICA ONLINE (AOL)	23
▲ PRODIGY	23
▲ THE MICROSOFT NETWORK (MSN)	24
▲ THE INTERNET AS A SUPERHIGHWAY	24
Cable Services & Activities	24
▲ CNN & CNBC DESKTOP VIDEO	26
▲ THE DISCOVERY CHANNEL	26
▲ VIACOM ONLINE DATA ACCESS	26
▲ TIME WARNER'S FULL SERVICE NETWORK	26

Telephone Company Activities	26
▲ BELL ATLANTIC	27
▲ AMERITECH	27
▲ SNET (SOUTHERN NEW ENGLAND TELEPHONE)	27
▲ US WEST	27
Direct Broadcast Satellite Services	28
▲ PRIMESTAR	28
▲ DIRECTV	28
▲ GALAXY INSTITUTE	28
QUESTIONS FOR PUBLIC TELEVISION	29
Home and School Access	29
Cost, Desirability and Viability of New Technologies and Services	30
Commercial Development of New Technologies	30
Access to Multiple Channels and Video	
Dialtone Services	30
Participation in Technology Trials	30
Missing Pieces in the New Television	
Marketplace	31

C H A P T E R I I I

PUBLIC TELEVISION TRENDS AND ACTIVITIES

TELECOMMUNICATION TRENDS IN PUBLIC TELEVISION	34
National And State Satellite Networks	34
Hybrid State Networks	34
Moving Into the Digital Age	35
Online Computer Services	35
Producing for Multiple Distribution Outlets	35
The Emergence of Telecommunications Centers and Teleplexes	36
TELECOMMUNICATION ACTIVITIES BY PUBLIC TELEVISION	36
National and State Satellite Networks	37
▲ PBS NATIONAL SATELLITE	37

▲ KET STAR CHANNELS SATELLITE SYSTEM	37
▲ NEB*SAT	38
▲ SOUTH CAROLINA ETV MULTICHANNEL DIGITAL SATELLITE NETWORK	38

ONLINE SERVICES	39
▲ PUBLIC TELEVISION ON THE INTERNET	39
▲ PBS ONLINE	39
▲ LEARNING LINK	40
▲ COMMUNITY-WIDE EDUCATION AND INFORMATION (CWEIS)	41

MULTIMEDIA	42
▲ PBS VIDEO	42
▲ WGBH INTERACTIVE PROJECTS GROUP	42
▲ NEBRASKA INTERACTIVE MEDIA	43
▲ WNET KRAVIS MULTIMEDIA EDUCATION CENTER	43
▲ QED INTERACTIVE	43
▲ KUED MEDIA SOLUTIONS	43
▲ WISCONSIN COMMUNITY INFORMATION PARTNERSHIP (WICIP)	43

TELECOMMUNICATIONS CENTERS	43
▲ OHIO UNIVERSITY TELECOMMUNICATIONS CENTER	44
▲ KVIE, SACRAMENTO	44
▲ WSIU —SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE (SIUC) BROADCASTING SERVICE	44

TELECOMMUNICATIONS TO SUPPORT MERGERS AND JOINT VENTURES	44
▲ TELECOMMUNICATIONS INFORMATION INFRASTRUCTURE ASSISTANCE PROGRAM (TIIAP)	45
▲ KBDI, DENVER	45
▲ NATIVE AMERICAN PUBLIC BROADCASTING CONSORTIUM (NAPBC)	45
▲ ARKANSAS EDUCATIONAL TELEVISION COMMISSION (AETN)	45
▲ RHODE ISLAND NETWORK (RINET)	45

MULTICHANNEL CABLE AND BROADCAST SERVICES	46
▲ KCSM—SAMNET	46
▲ NEBRASKA ETV—EDUCABLE	46
▲ OETA—THE LITERACY CHANNEL	46
▲ WTVS, DETROIT—COLLEGE CABLE CHANNEL	46
▲ KVIE—CHANNEL 7	46
▲ WXXI, ROCHESTER—CABLE CITY 12	46
ADVANCED TELEVISION	47

ISSUES FOR PUBLIC TELEVISION	47
Public Television and the Information Superhighway	47
THINKING ABOUT AND PLANNING FOR THE FUTURE	48
▲ DISTINGUISHING WHAT IS REAL AND WHAT IS NOT	49
▲ THINK OUT OF THE BOX	49
▲ THINK LIKE A BUSINESS PERSON	49
▲ COMPETE	49
▲ FORM PARTNERSHIPS	49
▲ PREPARE FOR CHANGE	50

C H A R T S

C H A P T E R I

A Snapshot of U.S. Households, 1995	1
Video Server Costs/Cost For nCube Servers	8
Estimated Cost of a Full Service Network	9
Time to Transmit a 10 Megabit File	10
Telephone Company Fiber Deployment	11
Projected Growth for Computer Households, 1995-1998	12
Projected Growth for CD-ROMs in Households	12
Changes in Computer Cost & Processing Speed	13
Penetration of Satellite Dishes in Selected Countries-1995	14
HDTV in Japan	15
Adoption of Addressable Cable Boxes/1983-1995	18

C H A P T E R I I

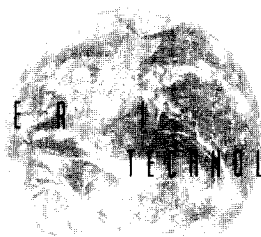
Projected Growth of Online Services in Households (Millions of Households)	24
New Cable Networks Competing for Channel Space	25
Cable Channel Availability-1995	26
Projected Growth of Video Distribution Competitors	28
Access to Technologies by K-12 Public Schools	29

C H A P T E R I I I

Selected Telecommunication Activities by Public TV Stations	33
What's on the PBS Satellite	37
Selected Public TV Addresses on the World Wide Web	40
Current PTU CWEIS Partnerships	42
Public Television and its Many Partners	42
Public TV Participants in TIIRP	45

CHAPTER 1

TECHNOLOGY TRENDS & SERVICE IMPLICATIONS



INTRODUCTION

A fundamental shift is taking place in the way that television programs and related video, data and text services will be delivered to homes and schools. This shift has been captured in a broad metaphor: public television is becoming public telecommunications. The programs and services we provide are delivered by many forms of electronic communication, not just broadcast television.

Behind the simple metaphor lies a dizzying array of technologies that are affecting not just public television but commercial television, cable, computer service providers, publishers and telephone organizations. These technologies include digital video, online networks and the Internet, direct broadcast satellites, fiber optics, video servers, and multimedia computers, among others. Equally daunting are the proposed services that will be delivered to homes and schools: video programs retrieved from a special storage device on-demand, interactive programs, 500 channels of niche services, multimedia databases, and video telephone calls.

At the same time, there is a great deal of hype and pie-in-the-sky promises being generated by technology marketers. In this environment, how can public television management come to grips with what is really happening and create a plan of action to move forward? *The New Plain English Guide to Technology* addresses these issues. It does not provide a technical analysis for station engineers. Rather, it provides a layman's guide to new technologies and services for station managers in programming, production, education, planning and other nontechnical departments.

The Guide describes major technology trends and the implications of these trends for consumer services. It also reviews new technology activities by commercial groups such as cable operators and telephone companies as well as how these activities may affect public television. A strong emphasis is placed on the telecommunication trends within public television and the many activities and services that are utilizing new technologies. The Guide concludes with a discussion of practical and strategic issues for managers as they plan for the future.

A SNAPSHOT OF U.S. HOUSEHOLDS, 1995

Average Number of Persons Per Household:

2.8

Own a VCR:

85%

Subscribe to Cable TV:

64%

Subscribe to Pay TV:

28%

Average Number of TV Sets:

2.2

Hours TV Viewing Per Week:

52.8

Source: A.C. Nielsen Co.; U.S. Census; SRI

Some of the major questions addressed in the Guide include:

- ▲ Which of the new technologies and services are most likely to affect public television?
- ▲ How will viewers' relationship to television change over the next few years?
- ▲ What opportunities are presented by the emerging technologies for public television to provide new or improved services to homes and schools?
- ▲ Are stations developing new services by themselves or in partnerships with other organizations? Who are potential partners for joint ventures and how do stations find these partners?
- ▲ What are the risks associated with developing new services and what are the risks associated with doing nothing?

TECHNOLOGY TRENDS AND SERVICE IMPLICATIONS

A series of technological developments is leading to dramatic changes in television. These include digital compression, advanced television, fiber optics and direct broadcast satellites (DBS). Another set of technological developments presents opportunities to enhance television services or, alternatively, to compete with television for the attention of audiences. These include interactive TV, CD-ROM and online systems.

Many new services build upon these technological developments, including video-on-demand, interactive program guides, telecommuting services, multimedia education content and electronic bulletin boards.

It is important to understand the major terms and acronyms that represent these new technologies and services, e.g., video servers, DBS, electronic program guides, ADSL and video dialtone. It is even more important to understand the realities behind the new technologies—to distinguish real trends from the hype that inevitably surrounds new technologies. In addition, many timing and pricing issues need to be addressed: when will the technologies be

available; how soon will service providers and consumers adopt them; and, what will they cost? It is also useful to track the groups that are developing the technologies and services along with the industry convergence that is occurring among broadcast, cable, computing and telecommunications organizations.

From a public television perspective, it is essential to follow these trends and assess their implications. What opportunities are provided by the new technologies? Do any of the new technologies or services pose a competitive threat? Should public television move forward quickly and provide new services or wait a few years when more consumers and schools will be able to receive the new services? Different stations serving different types of needs are taking a number of approaches. In this sense, there is no single answer to the question—what should a station do? At the same time, several clear and consistent trends among stations are emerging.

To help you come to terms with technology trends and understand their implications both for public television and our audiences, this chapter will explore:

TECHNOLOGY TRENDS

This section treats several important trends in telecommunication technologies—online networks, video servers, upgrades to cable systems and telephone networks, multimedia, direct broadcast satellites and digital TV—that are changing the types of services that broadcasters, cable operators and telephone companies can provide as well as how users access services.

CONSUMER SERVICE IMPLICATIONS

This section describes some of the new services that can be provided in the emerging telecommunications environment—teleshopping, tele-education, telemedicine, interactive TV programs, electronic program guides, video-on-demand, personalized media and multimedia.

TECHNOLOGY TRENDS

Online Networks

Online networks are electronic text information services that are usually accessed through a personal computer and modem hooked up to a regular telephone line. Most services available to consumers and businesses are subscription-based and provide a variety of fea-

tures and topics such as news, electronic mail, shopping and reference resources managed by an online service company. In order to access an online service, a dedicated software package is generally used. The software allows you to make the communication connection to the service and access any of the features provided by the particular company.

The first online services (or videotext services as they were originally known) started commercially in the U.S. in the late 1970s. Newspaper companies were among the first information providers to see online services as a logical new delivery vehicle for their editorial content, advertising and features such as crossword puzzles. Many new services were created out of partnerships between news or information providers and communication companies. Over the first decade, online services grew at a slow pace. The recent rapid development of the personal computer (PC) market, combined with lower costs for high-speed modems and the wide availability of the Internet, however, has boosted the popularity of online services. Several companies launched new services in 1994-1995 as the number of potential customers increased.

Today, online services offer a wider variety of advanced communication features to their subscribers:

- ▲ Electronic mail (e-mail), a traditional online feature that originally provided communication between subscribers on the same service, can now be sent through interlinked networks to members of other online services. Individuals on any public online service, therefore, are now interconnected to one another through e-mail.
- ▲ Bulletin boards are a form of communication for groups. Typically, bulletin boards are organized around topics such as travel, parenting, investing in stocks, etc. People post messages in a bulletin board for all users to read. Others can reply to specific messages or add new comments.
- ▲ "Chat" is yet another form of communication among online users. Chat is a real-time text conversation between two or more people who log on to the same online service at the same time. Mes-

stantly for anyone who is participating in the chat session. While most uses of "chat" involve conversation and socializing among people discussing hobbies and general topics, there are also managed forums and "meetings" which involve community, education and entertainment themes. For example, a doctor, politician or TV celebrity can be scheduled to participate online and to "chat" in real time about a specific topic.

The Internet

In simple terms, the Internet is a connection among computer networks around the world. It is a "network of networks." The standard computer language or protocol by which the thousands of networks and millions of computers on the Internet are linked makes it possible for them to communicate with each other. All linked networks have a unique Internet address. By entering its address, an Internet user is connected to a particular network anywhere in the world—to search through information, request files or send messages. The computer networks accessed can be located virtually anywhere in the world—at a government department in the U.S. or at a university library in another country, for example.

The Internet began in the 1960s as a military project funded by the U.S. Department of Defense. The U.S. Government wanted to establish a system to link computers and communications together in a network with no primary or central control point that could be obliterated in a nuclear attack. The set of standards and protocols used to link these computer networks became the basis for the Internet today. Through the years, several nonmilitary research organizations around the world, including the National Science Foundation and various universities, began to fund extensions to the system.

Today, the Internet has grown to thousands of interconnected networks. There is still no ownership of the Internet although most networks that connect to or provide access to the Internet are privately owned. A vast majority of networks and businesses operating on the Internet provide information free of charge to anyone who enters their site. A few companies, however, charge a subscription or membership fee to retrieve data or search through their files.

Within the Internet, there are a few specific features and general capabilities. A very popular feature of the Internet is the World Wide Web (WWW). The World Wide Web is one aspect of the Internet that is enhanced with graphics and user-friendly navigation. Many companies and organizations that are joining the Internet have established themselves with a WWW presence exclusively. In addition to allowing colorful graphics and stylish screen design, WWW pages contain "hyperlink" connections. A hyperlink is a word, phrase or image that is underlined or highlighted on your screen to indicate that it will lead you into another area within the Internet if you use your PC mouse or keyboard to select it. By selecting the link, you are either connected to a specific screen with more information on the item or you are presented with a list of related Internet locations from which you may make a selection. For example, a paragraph on education may mention libraries. If the word "library" is highlighted, you may select the word to see a listing of Internet sites that relate to libraries. Additional features and characteristics of the Internet include:

- ▲ FTP (File Transfer Protocol)—a feature that allows you to access another computer for the purpose of downloading files.
- ▲ Usenet Newsgroups—a bulletin board-like feature with thousands of topics and sub-topics.
- ▲ Search Tools—databases of Internet sites where you can enter a key word or phrase and be directed to a list of matching locations.
- ▲ HTML (HyperText Markup Language)—the computer language for pages on the World Wide Web. HTML is what allows WWW pages to be linked together.
- ▲ GIF (Graphics Interchange Format)—a widely used graphics format developed by CompuServe. It used to be the primary graphics file format supported on the World Wide Web.
- ▲ JPEG (Joint Photographic Experts Group)—a standardized image compression mechanism. With its ability to support a wider range of colors and generally smaller file sizes, it has begun to supplant GIF as the dominant Internet graphics file format.
- ▲ URL (Uniform Resource Locator)—the address for a site, page or resource on the Internet. A typical URL is a long string of letters and punctuation marks, e.g., <http://www.pbs.org>.

A technical issue that is key to Internet usability is connection speed. A high percentage of activity on the Internet involves downloading files and viewing screens with extensive graphics. Slower speed modems, therefore, make Internet access prohibitively slow. As higher speed modems become readily available at reasonable prices, screen access and downloading time will become less of an issue. Some online service providers are counting heavily on integrating Internet features into their offerings and are looking into ways of providing even faster access to their subscribers. One idea is to make services accessible through Integrated Services Digital Network or ISDN (a high-speed telephone connection). Since ISDN requires special phone equipment, it may take a few years for truly fast Internet access to become commonplace among users.

INTERACTIVE TELEVISION

A Brief History of Interactive Television

Interactive television has become a popular buzzword for a futuristic television environment in which people can play video games in competition with other households, choose from a library of movies on demand and participate in telecourses where a teacher and students can see and hear each other. There have been many attempts to launch interactive TV services in the past, with mixed results; however, some simple forms have been operating for many years.

The earliest interactive TV program was *Winky Dink and You*, a 1955 CBS cartoon program for children. In order to interact with the program, children were supposed to buy a

special plastic screen and place it over their TV screen. When the cartoon character ran into trouble, children were asked to draw on the TV screen to help him. Unfortunately, some children failed to buy the plastic screen and simply drew on the TV set, leading to an early demise for Winky Dink.

Interactive TV has been tried many times over the past few decades and produced mixed results. In the late 1970s, the National Science Foundation and other federal agencies supported a number of trials for education and social services. The trials were successful in demonstrating what could be done with interactive TV, but technical problems, high costs and organizational barriers prevented most of them from becoming regular services. The trials employed many forms of interactive TV including two-way video between locations and one-way video with a return data signal from end users, e.g., to answer multiple choice options presented in the video.

Warner Amex Cable also tried interactive TV in the late 1970s and early 1980s. Their QUBE system was installed in Columbus (Ohio), Pittsburgh and Dallas, among other cities. QUBE employed one-way video and a return data signal from homes: people could press one of four buttons to vote on options in a program, participate in polling and answer questions in educational programs. QUBE shared a similar set of experiences as the NSF trials: high costs, technical problems and relatively low usage levels. It too was withdrawn after a few years.

During the 1980s, a simpler and cheaper form of interactive TV began to emerge in public television and other educational video. It used one-way video and return audio (via telephone calls) to the live host or teacher and, in some cases, return data. Many of these services have been successful and are in regular use, although they have received little attention in discussions about interactive television. The outlook for interactive television has improved more recently as many very large broadcast, cable, telephone and computer software companies enter the market. These companies are offering a wide range of new products and services ranging from the simple and inexpensive to the very complex and expensive. It is difficult to imagine how some could possibly survive, yet others are doing quite well.

What Is Interactive TV?

There are many terms associated with interactive television. The first important set of terms is "downstream" and "upstream." Downstream is the TV signal and anything that accompanies it as it travels from the source of the programming, e.g., a cable operator or a TV station, to users in homes or schools. Upstream is the return path which allows the user to respond to questions or ask for changes to the program being shown. The request for changes would be sent back to the TV station or cable system, or in some cases, merely provide instructions to the TV set, interactive videodisc player, VCR or special purpose terminal box. It carries video, audio or data as people make choices, answer polling questions or talk back to the host of a program. With these distinctions in mind, it is possible to classify interactive television systems under four categories:

Pseudo-Interactive TV

These systems include additional information within the downstream signals from the station or other delivery system. The additional information does not show up on the screen except by viewer command, and is stored in a local terminal device and updated by the delivery system as needed. Early examples include teletext, which is widely used in Europe but was never successful in the U.S. More recently, a variety of specialized terminal products have begun to appear in the market. These products offer services such as viewer guides, automated VCR control, video games and expanded advertiser information. Most of these services make use of the same coding structure that public television has used for many years to provide closed captioning services. Public television can take pride in being the champion for this technology, including recent leadership in convincing Congress that caption decoders be built into all TV receivers over 19 inches. This action has been responsible for much of the renewed commercial interest in broadcast data services. A number of the new services appear to be fairly successful. The PBS/Sony-sponsored timing signals to set VCR clocks and PBS Enterprises/National Datacast customer program guide and games services offer some recent examples of services carried by many public television stations.



The National Association of Broadcasters has sponsored testing of several approaches to add much higher capacity data services within existing television broadcast signals. The NAB expects the necessary industry standards for such a system to be completed soon. One of the senior NAB executives was recently appointed CEO of a new company established by a consortium of commercial television stations to exploit new services which could be carried by this system.

Another type of pseudo-interactivity is provided by the interactive laser disc. PBS Video and the associated producing stations have introduced several very successful interactive disc titles for educational use such as *Eyes on the Prize*.

While most people would not include multiple, time shifted schedules as a form of interactivity, its purpose is to offer the viewer more "control" of program schedules in a simplified form of video on demand. The program schedule "control" device in this case is the remote control channel selector. HBO and Cinemax have found time shifting to be very successful and a cost-effective way to improve viewership and profits in any cable operator who has a system capacity of at least 36 channels. Even more frequent schedule shifting is likely to become far more common in the so-called 500 channel world. Bundled sets of channels dedicated to a common theme are also likely to appear. For example, in news programs, viewers will be able to select more in-depth coverage of a few topics after the initial news program introduction rather than continuing to watch "sound byte"-style coverage of all the topics covered by the standard program. Each selected topic would be covered in a style more like *The NewsHour with Jim Lehrer*, in sports programs such as golf, a viewer will be able to select a channel which spends more time covering a specific player, or during the Olympics, simultaneous events can be covered on different channels. (This was tried unsuccessfully on pay-per-view, but as the producer has confirmed, unacceptably high prices discouraged most interested viewers.)

Low-End Interactive TV

Low-end systems include one-way video downstream signals with upstream audio, e.g., a teacher in a telecourse provides the downstream video and students at a distant location provide upstream audio via a live telephone call

to the teacher. It also includes video downstream and upstream data. The upstream data may be in real time, as when students answer multiple choice questions using a special upstream data terminal, or it may be in non-real time, as when students use electronic mail or computer bulletin boards to communicate with a telecourse instructor between televised programs.

High-End Interactive TV

High-end systems allow each individual end user to request different video segments from a program provider. The video segments might include hundreds of movies, a specific news story from a menu of stories in a news program, or one of several versions of a TV program—each with a different ending.

In high-end interactive TV, hundreds of channels and potentially thousands of video segments are stored on a video server or within a network of linked video servers. Individual users can request one of the channels or video segments and it is delivered to their specific home or location at the time of their choosing. By contrast, in regular cable TV or broadcast TV, a group of prescheduled channels is transmitted together to all homes with a TV set or all homes hooked up to cable. With high-end interactive TV, users also can play video games against other households, do home banking and shopping over TV, and interact in other ways directly over the TV system.

How It Works

High-end interactive TV can be provided over an advanced telephone or cable network. In both cases, a very high capacity video storage device called a video server stores video segments in digital form (the zeros and ones of computer technology). When an end user requests a video segment, the data are pulled from the video server in discrete packets and sent over a high capacity transmission system to homes or other locations. The video is sent through a switch that links the source of programming and the end user in a way similar to a telephone switch that links two callers. The end user requires a special set-top box that can receive the packets of data as they are sent, convert them back to regular analog TV and put them together to form video programming.